

A new *Synersaga* species from Cambodia (Lepidoptera, Lecithoceridae), with a world catalogue of the genus

Kyu-Tek Park^{1,†}, Yang-Seop Bae^{2,‡}

1 The Korean Academy of Science and Technology, Seungnam, Gyeonggi, 463-808 Korea; McGuire Center for Lepidoptera and Biodiversity, University of Florida, Gainesville, FL 32611 USA 2 Division of Life Sciences, University of Incheon, Incheon, 406-772 Korea

† [urn:lsid:zoobank.org:author:9A4B98D7-8F83-4413-AE67-D19D9091BEBB](https://doi.org/10.3897/zookeys.187.2660#author1)

‡ [urn:lsid:zoobank.org:author:B44F4DF4-51F3-4C44-AA1B-B8950D3A8F54](https://doi.org/10.3897/zookeys.187.2660#author2)

Corresponding author: Kyu-Tek Park (keitpark22@gmail.com)

Academic editor: E. van Nieuwerkerken | Received 11 January 2011 | Accepted 23 March 2012 | Published 27 April 2012

[urn:lsid:zoobank.org:pub:D460E065-589D-4FC0-BC23-6722BF9795DC](https://doi.org/10.3897/zookeys.187.2660#doi)

Citation: Park K-T, Bae Y-S (2012) A new *Synersaga* species from Cambodia (Lepidoptera, Lecithoceridae), with a world catalogue of the genus. ZooKeys 187: 1–7. doi: 10.3897/zookeys.187.2660

Abstract

A new species of the genus *Synersaga* Gozmány, *S. mondulkiriensis* sp. n., is described from Cambodia. The genus is diagnosed, and a global catalogue for the genus is provided.

Keywords

Lepidoptera, Lecithoceridae, *Synersaga*, new species, Cambodia, taxonomy

Introduction

The family Lecithoceridae (Lepidoptera, Gelechioidea) is characterized by the very long antenna, usually longer than the forewing, and the male genitalia with gnathos bent downwards or absent. These characters are useful to differentiate from other gelechioid-moths. With respect to Lecithoceridae biology, larvae are known to feed on dead plant materials. A few Australian species have been reported to be reared on leaf litters of eucalypt (Common 1996). Recently, Komai et al. (2011) reported that two species of Lecithocerinae (*Homaloxestis myeloxesta* Meyrick, 1932 and *Lecithocera*

thiodora (Meyrick, 1914)) and three species of Torodorinae (*Athyromoris martialis* Meyrick, 1935, *Deltoplastis apostatis* (Meyrick, 1932), and *Halolaguna sublaxata* Gozmány, 1978) were reared from dead leaves of several unknown broadleaved trees in Japan. The family is mostly distributed in the Oriental and Australian Regions, around 1,200 described species (van Niekerken et al. 2011).

Synersaga Gozmány, 1978 is a small genus belonging to the subfamily Lecithocerinae that comprises six species only in the Oriental Region: the type species, *S. pseudocathara* (Diakonoff, 1952) described from Myanmar, and five more species from East and Southeast Asia (Gozmány 1978; Park 2007, 2009; Park et al. 2007). Herein a new species, *S. mondulkiriensis* sp. nov., is described from Cambodia. Moths have usually unicolorous forewing with yellowish-brown to dark-fuscous ground color.

The genus is allied to *Lecithocera* Herrich-Schäffer, 1853 and is defined by the combination of following characters: vein R_3 on the forewing is separate or connate and the male genitalia have the cucullus fairly elongated and usually expanded distally, and well-developed caudal processes of the juxta. On the other hand, for several species of *Lecithocera* known from Sri Lanka, which have male genitalia resembling *Synersaga*, e.g. *L. capnaula* Meyrick, 1911, *L. haemylopsis* (Meyrick, 1911), *L. nubigena* (Meyrick, 1911), *L. paroena* (Meyrick, 1906), and *L. paroristis* (Meyrick, 1911), the generic placement should be reconsidered by examining the forewing venation.

Material and methods

The present study is based on recent material collected by the authors in Cambodia, from the result of an entomological expedition to Cambodia by the Environmental Ministry, Korea. The wingspan is measured from the left wing apex to the right wing apex, including fringe. The color standard for the description of adults follows Körnerup and Wanscher (1978). Types are deposited in the University of Incheon, Korea (UIK) on indefinite loan from Cambodia. Abbreviations for museums: HMNH= Hungarian Museum of natural History, Budapest, Hungary; KNA= Korea National Arboretum, Pocheon, Korea; UIK= University of Incheon, Korea; OPU= Osaka Prefectural University, Osaka, Japan; NRS= Naturhistoriska Riksmuseet, Stockholm, Denmark.

Taxonomic Accounts

Genus *Synersaga* Gozmány, 1978

<http://species-id.net/wiki/Synersaga>

Synersaga Gozmány, 1978: 141; Wu, 1997: 174; Park et al., 2007: 206; Park, 2009: 2. Type species: *Lecithocera pseudocathra* Diakonoff, 1951: 76. Type locality: Myanmar = *Anamimnesis* Gozmány, 1978:143. Type species: *Anamimnesis bleszynskii* Gozman, 1978: 143 (synonymized by Park 2000).

Note. *Synersaga* is characterized by the forewing characters: forewing slightly broader distally with round apex, evenly colored, with yellowish brown or blackish ground color; venation with R_3 free or connate with R_{4+5} ; M_3 and CuA_2 short-stalked or connate. However, the forewing color patterns of the known species are very similar to each other and they can be differentiated from one another by the shape of the uncus and the caudal processes of the juxta in the male genitalia. The abdominal tergites are densely spinose, and the seventh tergite is uniquely specialized, produced laterally with a sclerotized anterior margin.

World catalogue of *Synersaga*

<i>bleszynskii</i> (Gozmány, 1978: 143)	China
TL (Type locality): Chekiang, China. Type in HNMH.	
Fig.: Gozmány (1978, Taf. 8, 37, Fig. 86; Park (2000, Figs 20, 20a)	
<i>caradjai</i> (Gozmány, 1978: 143)	Taiwan
TL: Kosempo, Taiwan. Type in HNHM.	
Fig.: Gozmány (1978, Taf. 8, 37, Fig. 85)	
<i>kuni</i> Park, 2007: 206	Vietnam
TL: Cuc Phoung, N. Vietnam. Type in KNA.	
Fig.: Park et al. (2007, Figs 8, 17, 17a)	
<i>mondulkiriensis</i> sp. n.	Cambodia
TL: Mondulkiri, Cambodia. Type in UIK.	
Fig.: Park & Bae (2012, Figs 4–12)	
<i>nigriptera</i> Park, 2007: 208	Vietnam
TL: Babe, N. Vietnam. Type in KNA.	
Fig.: Park et al. (2007, Figs 9, 18, 18a, 22)	
<i>phuruaensis</i> Park, 2009:2	Thailand
TL: Loei, China. Type in OPU.	
Fig.: Park (2009, Figs 4–6, 8, 8a, 10)	
<i>pseudocathra</i> (Diakonoff, 1951: 76)*	Myanmar
Ark. Zool. 1951, 3: 76. TL: Kambaiti, Myanmar. Type in NRS.	
Fig.: Diakonoff (1951, Figs 13 (male), 15 & 16 (female))	

Synersaga mondulkiriensis sp. n.

urn:lsid:zoobank.org:act:839DA14C-9E99-4CEC-A7A0-24E0826F8454

http://species-id.net/wiki/Synersaga_mondulkiriensis

Figs 1–12

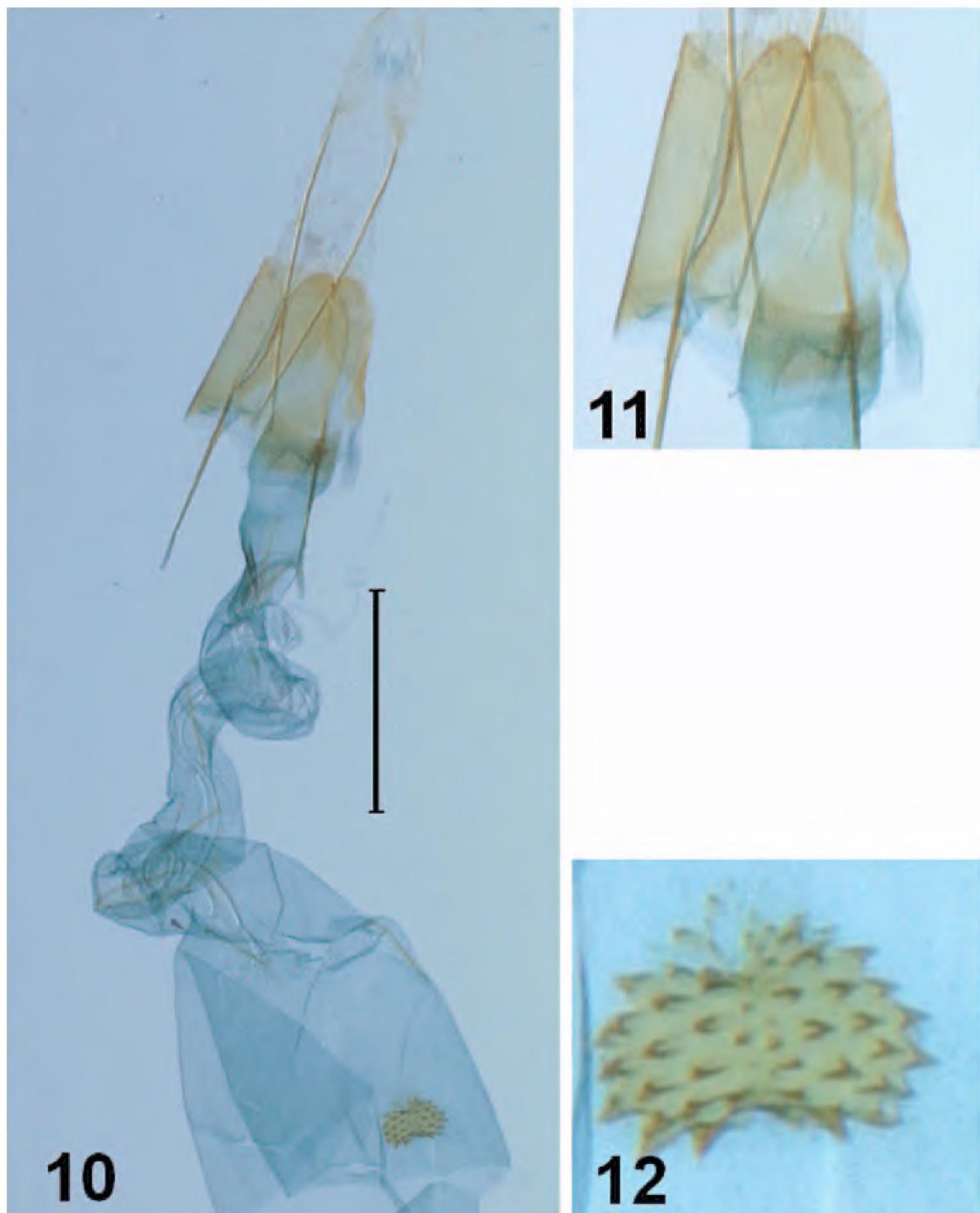
Type material. Holotype ♂ – Cambodia, Prov. Mondulkiri, Seima Biodiversity Conservation Area, 12°57'N, 107°10'E, 3–8 July 2009 (Bae & Chae), gen. slide no. CIS-6072/Park. Paratype – 3♂, 1♀, same locality, 7 Oct. 2010.

* Figure by Diakonoff (1951) was erroneously numbered: Fig. 14 is that of *L. pellax* Meyrick; and Gozmány (1978) cited erroneously “Daikonoff (1951)” as “Diakonoff (1952)”.



Figures 1–9. *Synersaga mondulkiriensis* sp. n., holotype **1** adult, holotype **2** head in dorsal view **3** labial palpus **4** male genitalia **5** close-up of juxta **6** aedeagus **7** close-up of cornuti **8** 1st–4th abdominal segments **9** close-up of 6th–8th abdominal segments. Scale bar: 1 mm.

Diagnosis. This new species is similar to *S. pseudocathara* from Myanmar, and *S. kuni* and *S. nigriptera* from Vietnam in the external and male genitalic characters. It can be distinguished from them by the shape of cucullus and the caudal processes of the juxta in the male genitalia. The caudal processes of the juxta of the new species are



Figures 10–12. Female genitalia of *Synersaga mondulkiriensis* sp. n. **10** genitalia **11** 8th segment **12** genitalia. Scale bar: 1 mm.

similar to those of *S. nigriptera*, but longer and arched inwardly, and the distal portion of the cucullus is more or less clavate.

Description. Adult (Figures 1, 2, 3). Wingspan, 17–18 mm. Head and thorax dark fuscous dorsally. Antenna dark fuscous throughout, relatively thick. Second segment of labial palpus fairly thickened, dark fuscous on outer surface with orange white

apex, orange white on inner surface; 3rd segment slender, as long as 2nd segment, orange white all around. Forewing covered with dark fuscous scales throughout; two blackish discal spots well developed: one in middle, the other larger one at end of cell; apex rounded; termen slightly concave medially; venation with R₁ arising from middle of cell; R₂ nearer to R₃ than R₁ at base; R₃ free; R₄ and R₅ stalked for basal 3/5 length; R₅ reaching just beyond apex; M₃ arising from half between M₂ and CuA₁₊₂ at base; CuA₁ and CuA₂ stalked for basal 1/5. Hindwing broader than forewing, pale brownish orange; apex more or less obtuse; termen sinuate; fringe concolorous, with narrow orange white basal line; venation with M₃ and CuA₁ short stalked. Hind tibia clothed with orange gray scales.

Male genitalia (Figures 4, 5, 6, 7). Uncus broad, short, obtuse, not exceeding basal stalk of gnathos, with small median lobe on caudal margin. Median process of gnathos strongly bent beyond middle, with acute apex. Valva broad basally, with triangular process near base on costa; costa gently concave; ventral margin gently arched outward in basal half; cucullus elongate, broadly expanded with round outer margin; dense long setae in basal half of cucullus, fairly setose beyond. Juxta with caudal processes long, gently arched inward, while the processes in *S. nigriptera* nearly straight, clavate. Aedeagus gently curved, shorter than valva+cucullus, with finely dentate along ventral and dorsal margins apically; cornuti consist of a series of numerous needle-like cornuti. Abdominal segments in Figures 8 and 9.

Female genitalia (Figures 10, 11, 12). Similar to those of *S. nigriptera*. Caudal margin of eighth abdominal sternite with deep Y-shaped medial emargination. Dorsal surface of ostial plate with dense spinules; caudal margin of ostium bursae concave. Antrum weakly sclerotized, cup-shaped. Ductus bursae coiled twice, slightly longer than corpus bursae, nearly same width throughout, with several needle-like spines internally. Corpus bursae elongate; signum a semiovate plate denticulate throughout.

Distribution. Cambodia (Mondulkiri).

Etymology. The species name is derived from the type locality.

Acknowledgements

We are indebted to Prof. Woo-Shin Lee, Seoul National University, Korea; Mrs. Kry Masphal and Thuch Phalla, Wildlife Protection Office, Phnom Penh, Cambodia, for their helpful collecting management. The present study was supported in part by the National Institute of Biological Resources (NIBR), the Ministry of Environment, and the University of Incheon Research Grant (2010) in Korea. We thank Dr. James E. Hayden, Florida State Collection of Arthropods, Division of Plant Industry, FDACS, Gainesville, FL, USA, for his careful reading and corrections to the manuscript.

References

- Diakonoff A (1951) Entomological results from the Swedish expedition 1934 to Burma and British India. Lepid. Microlepidoptera 1. Arkiv for Zoologi. (2)3(6): 59–94.
- Gozmány L (1978) Lecithoceridae. In: Amsel HG, Gregor F, Reisser H (Eds) Microlepidoptera Palaearctica. Vol. 5. Georg Fromme & Co., Wien, 306 pp.
- Komai F, Yoshiyasu Y, Nasu Y, Saito T (2011) A guide to the Lepidoptera of Japan. Tokai University Press, Kanagawa, 1305 pp.
- Kornerup A, Wanscher JH (1978) Methuen Handbook of Colour. 2nd ed. Methuen & Co., London, 252 pp.
- Nieukerken EJ van, Kaila L, Kitching IJ, Kristensen NP, Lees DC, Minet J, Mitter C, Mutanen M, Regier JC, Simonsen TJ, Wahlberg N, Yen S-H, Zahiri R, Adamski D, Baixeras J, Bartsch D, Bengtsson BÅ, Brown JW, Bucheli SR, Davis DR, De Prins J, De Prins W, Epstein ME, Gentili-Poole P, Gielis C, Hättenschwiler P, Hausmann A, Holloway JD, Kallies A, Karsholt O, Kawahara AY, Koster SJC, Kozlov M, Lafontaine JD, Lamas G, Landry J-F, Lee S, Nuss M, Park K-T, Penz C, Rota J, Schintlmeister A, Schmidt BC, Sohn J-C, Solis MA, Tarmann GM, Warren AD, Weller S, Yakovlev RV, Zolotuhin VV, Zwick A (2011) Order Lepidoptera Linnaeus, 1758. In: Zhang, Z.-Q. (Ed.), Animal biodiversity: An outline of higher-level classification and survey of taxonomic richness. Zootaxa 3148: 212–221. <http://www.mapress.com/zootaxa/2011/f/zt03148p221.pdf>
- Park KT (2009) Two new species of the genus *Tisis* Walker and *Syneraga* Gozmány (Lepidoptera, Lecithoceridae) from Thailand. Tropical Lepidoptera Research 19: 1–3.
- Park KT (2000) Lecithoceridae (Lepidoptera) of Taiwan (II): Subfamily Lecithocerinae: Genus *Lecithocera* Herrich-Schäffer and its allies. Zoological Studies 39: 360–374.
- Park KT, Kim MY, Kim Sora, Cha MY, Byun BK, Nguyen C (2007) Lecithoceridae of Vietnam I. Genera *Homaloxestis* Meyrick and *Syneraga* Gozmány. Journal of Asia Pacific Entomology 10: 201–209. doi: 10.1016/S1226-8615(08)60354-4
- Wu C. 1997. Lepidoptera Lecithoceridae. Fauna Sinica, Insecta, 7. Science Press, Beijing, 302 pp.